

*Suba' →*

1. A multi-beam optical scanner  
comprising:

a light source for [a multi-beam]

providing a pair of light beams;

[a coupling lens for coupling a  
plurality of light fluxes from said light  
source for a multi-beam to an image-  
forming optical system;]

a first image-formation system  
for focusing [a plurality of light fluxes  
coupled by said coupling lens] the pair  
of light beams from the light source in  
a direction corresponding to auxiliary  
scanning and forming [them to] the pair  
of light beams into images as a plurality  
of line images each [long] having a  
longer side in a direction corresponding  
to main scanning;

an optical deflector having a  
deflecting reflection surface adjacent to  
positions where [images as] said  
plurality of line images are formed for  
deflecting [said plurality of light fluxes]

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the pair of light beams;

a second image-formation system for separating the [plurality of light fluxes] pair of light beams deflected by said optical deflector from each other in a direction of auxiliary scanning on a scanned surface and converging the [plurality of light fluxes] pair of light beams as a plurality of light spots for optically scanning said scanned surface in accordance with deflection of the pair of light [fluxes] beams; wherein

a lateral magnification  $\beta$  in a direction corresponding to the auxiliary scanning [in a composite system] of the optical [system] scanner between said light source [for a multi-beam] and said scanned surface is as follows:

$$2 < \beta \leq 8.5$$

[and the plurality of light spots on the scanned surface optically scan scanning lines adjacent to each other].

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## 2. A multi-beam optical scanner

according to claim 1<sub>1</sub>[:] wherein said light source [for a multi-beam] comprises at least two [or more] LD light emitting sections [or LED light emitting sections] monolithically provided therein.

## 3. A multi-beam optical scanner

according to claim 1<sub>1</sub>[:] wherein said light source [for a multi-beam] comprises at least a pair of [two or more] LD light emitting sections [or LED light emitting sections] in [hybrid] combination [thereof].

## 4. A multi-beam optical scanner

according to claim 1<sub>1</sub>[:] wherein said light source [for a multi-beam has] comprises two LD light emitting sections, [and] wherein said LD light emitting sections are provided symmetric with respect to an optical axis of a coupling lens.

## 5. A multi-beam optical scanner

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14

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according to claim 1.[:] [wherein said]  
~~further comprising a coupling lens [is a~~  
~~collimate lens] for [collimating a~~  
~~plurality of] coupling a light [fluxes]~~  
~~beam~~ from said light source [for a  
 multi-beam at the same time].

6. A multi-beam optical scanner  
 according to claim 1,[:] wherein said  
 second image-formation system  
 includes a lengthy lens provided in a  
 side of the scanned surface.

7. A multi-beam optical scanner  
 according to claim 1,[:] wherein said  
 first image-formation system comprises  
 a [piece of] lens having power only in  
 the auxiliary scanning direction, while  
 said second image-formation system  
 comprises a constant-velocity  
 optical-scanning image-forming mirror  
 and a lengthy lens each provided on the  
 side of the scanned surface.

[8. A multi-beam optical  
 scanner according to claim 1; wherein a

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lateral magnification  $\beta$  in a direction corresponding to the auxiliary scanning in a composite system of the optical system between said light source for a multi-beam and the scanned surface is as follows:

173

$$2 < \beta \leq 8.5.]$$

9. A multi-beam optical scanner according to claim 1, wherein the second image-formation system comprises a focusing portion for focusing the plurality of light spots on the scanned surface into scanning lines that are adjacent to each other.

10. A multi-beam optical scanner according to claim 1, wherein said light source comprises at least two LED light emitting sections monolithically provided therein.

11. A multi-beam optical scanner according to claim 1, wherein said light source comprises at least a pair of LED light emitting sections in

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16

I combination.

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12. A multi-beam optical scanner according to claim 5, wherein said coupling lens is a collimate lens for collimating a light beam from said light source at the same time.

13. A multi-beam optical scanner comprising:

a pair of light beams;

a first image-formation system for focusing the pair of light beams from the light source in a direction corresponding to auxiliary scanning and forming the pair of light beams into images as a plurality of line images each having a longer side in a direction corresponding to main scanning;

an optical deflector having a deflecting reflection surface adjacent to positions where said plurality of line images are formed for deflecting the pair of light beams;

a second image-formation

09421332-101899

system for separating the pair of light beams deflected by said optical deflector from each other in a direction of auxiliary scanning on a scanned surface and converging the pair of light beams as a plurality of light spots for optically scanning said scanned surface in accordance with deflection of the pair of light beams; wherein

a lateral magnification  $\beta$  in a direction corresponding to the auxiliary scanning of the optical scanner is as follows:

$$2/\beta < 8.5.$$

14. An image forming apparatus comprising:

a multi-beam optical scanner including:

a light source for providing a pair of light beams;

a first image-formation system for focusing the pair of light beams from the light

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source in a direction  
corresponding to auxiliary  
scanning and forming the pair  
of light beams into images as a  
plurality of line images each  
having a longer side in a  
direction corresponding to main  
scanning:

an optical deflector  
having a deflecting reflection  
surface adjacent to positions  
where said plurality of line  
images are formed for  
deflecting the pair of light  
beams:

a second  
image-formation system for  
separating the pair of light  
beams deflected by said optical  
deflector from each other in a  
direction of auxiliary scanning  
on a scanned surface and  
converging the pair of light

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beams as a plurality of light spots for optically scanning said scanned surface in accordance with deflection of the pair of light beams; wherein

a lateral magnification  $\beta$  in a direction corresponding to the auxiliary scanning of the optical scanner is as follows:

$$2 < \beta < 8.5.$$

15. An image forming apparatus comprising:

a multi-beam optical scanner including:

a pair of light beams;

a first image-formation system for focusing the pair of light beams in a direction corresponding to auxiliary scanning and forming the pair of light beams into images as a plurality of line images each having a longer side in a

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direction corresponding to main scanning:

an optical deflector having a deflecting reflection surface adjacent to positions where said plurality of line images are formed for deflecting the pair of light beams:

a second image-formation system for separating the pair of light beams deflected by said optical deflector from each other in a direction of auxiliary scanning on a scanned surface and converging the pair of light beams as a plurality of light spots for optically scanning said scanned surface in accordance with deflection of the pair of light beams: wherein

a lateral magnification  $\beta$

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in a direction corresponding to  
the auxiliary scanning of the  
optical scanner is as follows:

$$2 < \beta < 8.5.$$

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